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(71) Applicant (for all designated States except US): **ASTRAZENECA AB** [SE/SE]; S-151 85 Södertälje (SE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BENKTZON, Maria** [SE/SE]; Ergonomi Design Gruppen AB, Box

14004, S-167 14 Bromma (SE). **NILSSON, Thomas** [SE/SE]; Ergonomi Design Gruppen AB, Box 14004, S-167 14 Bromma (SE). **VEJBRINK, Ulrika** [SE/SE]; Ergonomi Design Gruppen AB, Box 14004, S-167 14 Bromma (SE).

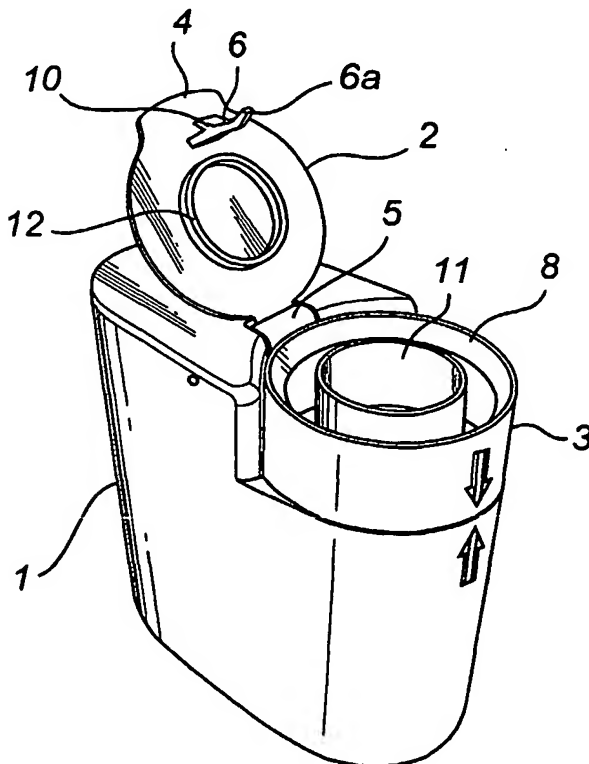
(74) Agent: **GLOBAL INTELLECTUAL PROPERTY**; AstraZeneca AB, S-151 85 Södertälje (SE).

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(54) Title: **SECURITY CONTAINER WITH LOCKING CLOSURE AND METHOD FOR LOCKING A CLOSURE**



(57) Abstract: The present invention relates to a container that can hold tablets or liquids, for example, for use in the pharmaceutical, chemical and food industries and in particular to a child resistant locking arrangement for a container. The object of the invention is to ensure that the container is easy to open, in particular, for elderly and disabled persons and that the container is child resistant and can be sealed to prevent excessive ingress of water vapour. The container comprises a hollow body holding solid or liquid contents and a closure, which closes the container. A locking ring is provided between the body and closure, which can rotate between body and closure. An indicator arrow is located on body and an indicator arrow is located on closure. The locking ring also carries an indicator arrow and it is only when the indicator arrow is aligned, by turning the locking ring, with the indicator arrows that the closure can be opened by lifting or flipping the projecting edge of the closure.



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Security container with locking closure and method for locking a closure

The present invention relates to a container which can hold tablets or liquids, for example, for use in the pharmaceutical, chemical and food industries and in particular to a locking arrangement for a container and/or a secondary containment region for a container.

Containers that have child resistant features are now generally available but these containers are typically very difficult for elderly or disabled persons to open. Reference should now be made to US patent No. 5908125 and other patents in the same area of technology. In general, child resistant containers require the user to simultaneously squeeze and turn the closure, or push and turn the closure, in order to release the closure from the container body. However, elderly persons or persons with dexterity problems find that the force required to squeeze or push the closure and simultaneously rotate the closure is too great or that they experience pain in attempting to open the closure. Those suffering from rheumatoid arthritis and osteoarthritis will find that they have to avoid any movement, which involves gripping, twisting or bending of the wrist.

Known child resistant containers comprise a cap locking arrangement whereby the user has to turn a cap and align two dots on the respective outer surfaces of the container and the cap. In this position the cap can be pushed open. However, we have found that after the cap has been placed back on the container the user has to remember to turn the cap again so that the two dots are no longer aligned otherwise the container is more readily opened and is no longer child resistant. Furthermore, we have found that when this type of container is opened, the cap partially obscures the view of the contents of the container. Furthermore, for some tablet pharmaceuticals the patient only has to take half a tablet dose. A further disadvantage of the present containers is that once the tablet has been removed from the container it has to be either stored in a separate location or placed back into the container with the other tablets. In this arrangement the part tablet can be hard to find at a later time.

According to a first aspect of the present invention, there is provided container comprising a hollow body, a closure movable between a closed condition and an open condition, a locking part for securing the closure in the closed condition, the locking part being moveable between a locking position and an unlocked position, and actuator means for moving the locking part from the unlocked position to the locking position as the closure is transferred between the respective conditions.

Preferably, the arrangement is such that as the closure is moved to the open condition and the locking part is in the unlocked position the actuator means moves the locking part to the locked position.

Preferably, the arrangement is such that as the closure is moved to the closed condition and the locking part is in the unlocked position the actuator means moves the locking part to the locked position.

The actuator means helps to ensure that the locking part is in a locking position after the closure has been opened and/or closed.

Preferably, the actuator means automatically moves the locking part as the closure is being opened and/or closed; therefore the child resistant feature is automatically activated when necessary during the opening operation and the closing operation.

The present invention aims to overcome the disadvantages we have found of the prior art containers by providing a locking arrangement for a container that is automatically placed in a locked condition.

Preferably, the closure and the locking part comprise respective cooperating locking elements, the arrangement being such that as the closure is removed from the body to open the container, the actuator means moves one of the locking elements relative to the other locking element.

Preferably, the arrangement of the cooperating locking elements located on the closure and the locking part is such that as the closure is pushed back onto the body to close the container, the actuator means moves one of the locking elements relative to the other locking element.

Preferably, the locking part carries an indicator that must be aligned with an indicator on the hollow body and/or the closure, the arrangement being such that in use the indicators are moved from an aligned position to a misaligned position by the actuator means.

In an alternative embodiment the cooperating locking elements are located on the body and the locking part, the arrangement being such that as the closure is removed from the body to open the container, the actuation means moves one of the locking elements relative to the other locking element.

Preferably, in this alternative embodiment the arrangement of the cooperating locking elements located on the body and the locking part is such that as the closure is pushed back onto the body to close the container, the actuation means moves one of the locking elements relative to the other locking element.

The locking part is preferably an annular locking ring.

Preferably, the actuator means comprises an elongate member disposed on the inside of the closure, and the locking ring comprises a ramp, the ramp being sloped such that as the elongate member makes contact with the ramp and is slid progressively along a surface of the ramp rotation of the locking ring results such that the indicators on the body and/or closure and the locking part are no longer aligned.

Preferably, the arrangement of the elongate member and the ramp is such that as the closure is removed from the body to open the container, the elongate member makes contact with a first surface of the ramp and rotation of the locking ring results such that the indicators on the body and/or closure and the locking part are no longer aligned.

Preferably, the arrangement of the elongate member and the ramp is such that as the closure is placed back onto the body to close the container and the indicators are aligned, the elongate member makes contact with a second surface of the ramp and rotation of the locking ring results such that the indicators on the body and/or closure and the locking part are no longer aligned.

Preferably, the ramp protrudes from a radially inner surface of the locking ring.

Alternatively, the ramp is a channel formed in the wall of locking ring, the central axis of the channel being at an angle from the axis of the ring.

Preferably, the elongate member is a flexible cantilever.

Preferably, the elongate member is hook shaped cantilever, extending from the inside surface of the closure.

The locking part is preferably located between the body and the closure.

The cooperating locking element located on the closure is preferably a lug.

In a first embodiment of the present invention the cooperating locking element located on the locking part is a circumferential flange disposed on the inside surface of the locking part and the lug is formed on the elongate member, the flange being formed with a recessed portion through which the lug can pass during opening and closing of the closure.

The ramp is preferably disposed axially below the circumferential flange and generally inline with the recessed portion of the flange, the arrangement being such that there is a gap between the uppermost part of the ramp and the circumferential flange.

In a second embodiment of the present invention the cooperating locking element located the locking part is a circumferential track attached to the inside surface of the locking part and the lug is formed with a distal head part, the lug extends from an inner surface of the closure, the track being formed with an access hole through which the head of the lug can pass during opening and closing of the closure.

The ramp is preferably disposed axially above the circumferential track.

Preferably, the arrangement of the ramp and the flange is such that upon rotation of the locking part in one direction the lug first passes through the gap and generally aligns with the recess before the elongate member makes contact with the ramp.

Preferably, the body has an outlet, which can be sealed by a sealing element located on the closure.

In an alternative embodiment of the present invention the lug comprises a member formed with a barbed distal end.

According to a second aspect of the present invention, there is provided a method for locking a closure to a container according to the first aspect of the present invention, the method comprising moving a locking part from an unlocked position to a locking position as a closure is transferred between respective conditions.

Preferably, the arrangement is such that as the closure is moved to the open condition the actuator means moves the locking part to the locked position.

Preferably, the arrangement is such that as the closure is moved to the closed condition the actuator means moves the locking part to the locked position.

Preferably the method comprises automatically moving a locking part during the opening and the closing operation of the closure.

The method ensures that the closure is locked to the container following the opening and/or closing of the container.

According to a third aspect of the present invention, there is provided a closure for a container according to the first aspect of the invention.

According to a fourth aspect of the present invention, there is provided a locking part for a container according to the first aspect of the invention.

According to a fifth aspect of the present invention, there is provided a hollow body for a container according to the first aspect of the invention.

According to a sixth aspect of the present invention, there is provided actuator means for a container according to the first aspect of the invention.

According to a seventh aspect of the present invention there is provided a container according to the previous aspects of the invention and comprising a second containment region.

Preferably, the second containment region is disposed at the upper region of the body and is sealed by the closure of the container.

Preferred embodiments of the present invention will now be described in detail, by way of example only, with reference to the accompanying drawings, of which:

Figure 1 is a perspective view of a first embodiment of a container in a closed condition and in a locked position;

Figure 2 is a perspective view of the container in Figure 1 when in the closed and unlocked position before the closure is opened;

Figure 3 is a perspective view of the container in Figure 1 with the closure opened;

Figure 4 is a top perspective view of the container in Figure 3;

Figure 5 is a side view in direction X of the container in Figure 2;

Figures 6, 7, 8 and 9 are left-hand side, right-hand side, top plan and bottom views respectively of the container in Figure 5;

Figure 10 shows slightly enlarged details of the ring in Figure 4;

Figure 11 shows another perspective of the details of the locking mechanism inside the ring in Figure 10;

Figure 12 is a perspective view of a second embodiment of the container in the closed and locked position;

Figures 13 and 14 are perspective views of the container in Figure 12 with the closure opened;

Figure 15 is a perspective view of a third embodiment of a container in the closed and unlocked position according to the present invention;

Figure 16 is a perspective view of the container in Figure 15 with the closure in an opened condition;

Figure 17 is a perspective view of the locking part of the container in Figure 15;

Figure 18 is a partial detailed view X of the locking part of the container in Figure 16;

Figure 19 is a partial detailed view Y of the closure and actuator of the container in Figure 16;

Figure 20 is a perspective view of a fourth embodiment of a container in the closed and unlocked position according to the present invention;

Figure 21 is a perspective view of the container in Figure 20 with the closure in an opened condition;

Figure 22 is a partial detailed view of the closure and actuator of the container in Figure 21; and

Figure 23 is a partial detailed view of the locking part of the container in Figure 21.

In Figures 1 to 11, the first embodiment of a container according to the present invention is depicted. The container comprises a hollow body 1 for holding solid or liquid contents and a closure 2, which closes the container. A locking part in the form of a locking ring 3 is provided between the body 1 and closure 2. The locking ring 3 is rotatable on the body 1. An indicator arrow A is located on the body 1 and an indicator arrow B is located on the closure 2. The locking ring 3 also carries an indicator arrow C and it is only when the indicator arrow C is aligned, by turning the locking ring 3, with the indicator arrows A and B (see Figure 2) that the closure 2 can be opened by lifting or flipping the projecting edge 4 of the closure 2. Clearly, an indicator arrow need only be provided on either the body 1 or the closure 2 but the user benefits from being able to align indicator arrow C on the locking ring 3 with either indicator arrow A or indicator arrow B.

The container also comprises actuator means in the form of an elongate member 6 that extends in a direction away from the inner surface of the closure 2. The member 6 comprises a hook shaped distal end 6a. Disposed between the distal end 6a and the closure 2 is a wedge shaped lug 10.

The locking ring 3 is located on the body 1 by way of a snap fit between circular rib formed on an annular shoulder (not shown) on the body 1 and a corresponding circular recess 12 formed adjacent the lower inner edge of the ring 3. The arrangement of the ring 3 and the body 1 is such that the ring 3 is secured to the body 1 but will rotate freely on the body 1.

In order that the closure 2 is locked onto the body 1, the locking ring 3 has a circumferential flange 8 on its inside surface. This flange 8 is formed with a recessed portion 9 through which the hook 6 and lug 10 can pass during opening and closing of the closure 2 if the arrows A, B, C are aligned. The lug 10 will sit under the flange 8 when the arrows are not aligned, thereby locking the closure 2 onto the body 1.

The locking ring 3 comprises a ramp 7 that is sloped from the axial direction of the ring 3 and extends from the inner surface of the ring 3. There is a gap 13 between the uppermost part of the ramp 7 and the flange 8 through which the lug 10 may pass when the arrows A, B, C are aligned. The ramp 7 comprises an upper inclined surface 14 and a lower inclined surface 16 (hidden in the Figures). The arrangement is such that if the arrows A, B, C are aligned and the closure 2 is opened the lug 10 passes through the opening 9 and the distal end 6a of the hook

6 will make contact with the lower inclined surface 16 of the ramp 7 and rotate the locking ring 3 i.e., back to the locked position. Also, the arrangement is such that if the arrows A, B, C are aligned and the closure 2 is closed the distal end 6a of the hook 6 will make contact with upper inclined surface 14 of the ramp 7 and rotate the locking ring 3 i.e., back to the locked position. In this respect, it should be noted that the locking ring 3 is freely rotatable on the body 1 once the hook 6 has travelled down the ramp 7.

In the embodiments shown the locking part is preferably in the form of a locking ring 3, however the locking part may be a non-annular shape for example a slideable element that is moveable by the actuator means in an arc or linear direction.

As an alternative, the ramp 7 could include a channel, which captures the tip of the hook 6 at the bottom of the ramp 7 whereby the hook 6 is only released when it has travelled to the top of the ramp 7. With this arrangement, the indicator arrow C is not aligned when the closure 2 has opened and the user can simply push the hook 6 over the flange 8 to close the closure 2.

The distal end 6a acts as an actuator that ensures that the respective arrow indicators are misaligned following the opening and/or closing of the container. The distal end 6a automatically moves the arrow indicators out of alignment during the opening operation and if necessary the closing operation. Therefore the child resistant feature is automatically activated during the opening operation and if necessary during the closing operation.

It should be noted that the hook 6 is flexible so that it is possible to push the closure 2 closed without aligning the hook 6 with the recessed portion 9. The lug 10 is sloped corresponding to the slope on the flange 8 so that it can simply be pushed over the flange 8 until the lug 10 slips beneath the flange 8 to lock the closure 2 onto the body 1.

The width of the recessed portion 9 is such that when the arrows A, B, C are aligned and the hook 6 sits at the bottom of the ramp 7, the lug 10 will be free to move out of the locking ring 3.

The body 1 in this embodiment has an annular opening 11 that is sealable by an annular rim 12 on the closure 2. This sealing arrangement helps prevent the ingress of water vapour, which could affect the stability of the contents and also acts to prevent leakage if the contents are liquid. The flange 8 and the annular opening 11 form a secondary containment volume 17. The volume 17 and the internal volume of the body 1 are separated from each other by an annular wall (not shown in the Figures). The volume 17 may be used to store material, such as part or whole pharmaceutical tablets that have been removed from the container body 1. The containment volume 17 also provides an area that may be used to inspect the material that has been removed from the body.

In Figures 12, 13 and 14, a second embodiment of a container according to the present invention is depicted. The container comprises a tubular hollow body 20 holding solid or liquid contents and a closure 21, which closes the container. A locking ring 23 is provided

between the body 20 and closure 21 which can rotate between body 20 and closure 21. An indicator arrow D is located on body 20 and an indicator arrow E is located the locking ring 23. As with the first embodiment it is only when the indicator arrows are aligned, by turning the locking ring, that the closure 21 can be opened by lifting or flipping the projecting edge 24 of the closure 21.

In Figures 13 and 14, the closure 21 has been opened and the user is able to take out the contents. Since the closure 21 is hinged to the body 20 at point 25, there is no obstruction to emptying the contents as the closure 21 can sit right back as far as the hinge point 25 will allow.

The closure 21 is formed with an annular collar 25 extending around the perimeter of the closure 21. Extending from an inner surface of the closure 21 is an elongate member 26 formed with a frusto conical end 28 at the distal end thereof. A wedge shaped locking lug 38 is formed on an outer surface of the annular collar 25.

The locking ring 23 comprises an outer annular collar 31 and a radially inner annular track 32 formed with an inner annular channel and an upper annular slot 34. The inner annular channel is directly below the slot 34. The width of the slot 34 is less than the width of the annular channel. At one point on the slot 34 the width increases forming a circular access hole 36. The outer annular collar 31 is formed with a channel 37 that is sloped from the axial direction of the ring 23.

The locking ring 23 is located on the body 20 by way of a snap fit between a circular rib (not shown) formed on the body 20 and a corresponding circular recess (not shown) formed adjacent the lower inner edge of the ring 23 such that the ring 23 is secured to the body 20 but will rotate freely on the body.

The arrangement is such that if the arrows D and E are aligned the end 28 will be adjacent the hole 36 and the lug 38 will be at the lowermost end of the channel 37 and the closure 21 can be opened. As the closure 21 is opened the end 28 will pass through the hole 36 and the lug 38 will make contact with the upper inclined surface of the channel 37 and rotate the locking ring 23 i.e., back to the locked position. Also, the arrangement is such that if the arrows D and E are aligned and the closure 21 is closed the end 28 will pass through the hole 36 and then the lug 38 will make contact with lower inclined surface of the channel 37 and rotate the locking ring 23 i.e., back to the locked position. In this respect, it should be noted that the locking ring 23 is freely rotatable on the body 20 once the lug 38 has travelled down the channel 37.

The body 20 in this embodiment has an annular opening 40 formed in an upper wall 41. The opening 40 is sealable by an annular rim 42 on the closure 2. This sealing arrangement helps prevent the ingress of water vapour which could affect the stability of the contents and also acts to prevent leakage if the contents are liquid. The upper wall 41 and annular track 32 form a secondary containment volume 43. The volume 43 may be used to store material, such as

part or whole pharmaceutical tablets that have been removed from the container body 20. The containment volume 43 also provides an area that may be used to inspect the material that has been removed from the body.

The lug 38 acts as an actuator that ensures that the respective arrow indicators are misaligned following the opening and/or closing of the container. The lug 38 automatically moves the arrow indicators out of alignment during the opening operation and if necessary the closing operation. Therefore the child resistant feature is automatically activated during the opening operation and if necessary during the closing operation.

In Figures 15 to 19, a third embodiment of a container according to the present invention is depicted. The third embodiment comprises many common features as the first embodiment herein before described and the same reference numbers have been used to depict those common features.

The third embodiment container 50 comprises a hollow body 51 for holding solid or liquid contents and a closure 52, which closes the container. A locking part in the form of a locking ring 53 is provided between the body 51 and closure 52. The locking ring 53 is rotatable on the body 51. An indicator arrow B is located on the closure 52. The locking ring 53 also carries an indicator arrow C and it is only when the indicator arrow C is aligned, by turning the locking ring 53, with the indicator arrows B (see Figure 15) that the closure 52 can be opened by lifting or flipping the projecting edge 54 of the closure 52.

The container 51 also comprises actuator means in the form of an elongate member 6 that extends in a direction away from the inner surface of the closure 52. The member 6 comprises a hook shaped distal end 6a. Disposed between the distal end 6a and the closure 52 is a wedge shaped lug 10.

The locking ring 53 is located on the body 51 by way of a snap fit between circular rib formed on an annular shoulder (not shown) on the body 51 and a corresponding circular recess (not shown) formed adjacent the lower inner edge of the ring 53. The arrangement of the ring 53 and the body 51 is such that the ring 53 is secured to the body 51 but will rotate freely on the body 51.

The operation and function of the locking ring 53 and the actuator 6 is substantially the same as the description of the corresponding features of Figures 1 to 11 of the first aspect of the invention. It will be noted however that the locking ring 53 is disposed substantially about the central axis of the container 51. In this embodiment the container 51 is formed with an opening 55 located at one side of the container 51. The opening 55 provides access to the interior volume of the container 51.

A solid panel 63 seals a portion of the upper volume of the container 51. The panel 63 and an annular collar 61 form a second containment volume 64. A third containment volume 65 is formed by a portion of the panel 63, a portion of the radially outermost wall of the body 51

and actuate wall 67. The second and third containment volumes 64, 65 may be used to store solids or liquids. The second and third containment volumes 64, 65 may be used for storing pharmaceutical products such as pills or capsules and are particularly useful for storing partial pills or capsules. The containment volumes 64, 65 are sealed by the closure 52. The containment volumes 64, 65 also provide areas that may be used to inspect the material that has been removed from the body.

In Figures 20 to 23, a fourth embodiment of a container according to the present invention is depicted. The fourth embodiment comprises many common features as the first embodiment herein before described and the same reference numbers have been used to depict those common features.

The container 70 of the third embodiment differs from that of the first embodiment by the fact that the closure 72 of the container 70 extends across the uppermost end volume of the hollow body 1. The horizontal cross-section of the closure 72 is substantially the same as the horizontal cross-section of the body 1.

A solid panel 74 seals a portion of the upper volume of the container 1. The panel 74 and an upwardly extending collar 76 form a second containment volume 68. The second containment volume 68 may be used for storing pharmaceutical products such as pills or capsules and is particularly useful for storing partial pills or capsules. The containment volume 68 is sealed by the closure 72. The containment volume 68 also provides an area that may be used to inspect the material that has been removed from the body.

CLAIMS

1. A container comprising a hollow body, a closure movable between a closed condition and an open condition, a locking part for securing the closure in the closed condition, the locking part being moveable between a locking position and an unlocked position, and actuator means for moving the locking part from the unlocked position to the locking position as the closure is transferred between the respective conditions.
2. A container as claimed in Claim 1, wherein the arrangement is such that as the closure is moved to the open condition the actuator means moves the locking part to the locked position.
3. A container as claimed in Claim 1 or Claim 2, wherein the arrangement is such that as the closure is moved to the closed condition the actuator means moves the locking part to the locked position.
4. A container as claimed in Claim 2, wherein the closure and the locking part comprise respective cooperating locking elements, the arrangement being such that in use as the closure is removed from the body to open the container, the actuator means moves one of the locking elements relative to the other locking element.
5. A container as claimed in Claim 3, wherein the arrangement of the cooperating locking elements located on the closure and the locking part is such that as the closure is pushed back onto the body to close the container, the actuator means moves one of the locking elements relative to the other locking element.
6. A container as claimed in claim 4, wherein the cooperating locking elements are located on the body and the locking part, the arrangement being such that when the closure is removed from the body to open the container, the actuation means moves one of the locking elements relative to the other locking element and the arrangement of the cooperating locking elements located on the body and the locking part is such that when the closure is pushed back onto the body to close the container, the actuation means moves one of the locking elements relative to the other locking element.
7. A container as claimed in any of the preceding claims, wherein the locking part is a locking ring.
8. A container as claimed in any of the preceding claims 2 to 7, wherein the actuator means comprises an elongate member disposed on the inside of the closure, and the locking ring comprises a ramp, the ramp being sloped such that when the elongate member makes contact with the ramp and is slid progressively along a surface of the ramp, rotation of the locking ring results such that the indicators on the body and/or closure and the locking part are no longer aligned.

9. A container as claimed in claim 8, wherein the arrangement of the elongate member and the ramp is such that when the closure is removed from the body to open the container, the elongate member makes contact with a first surface of the ramp and rotation of the locking ring results such that the indicators on the body and/or closure and the locking part are no longer aligned.
10. A container as claimed in claim 8 or claim 9, wherein the arrangement of the elongate member and the ramp is such that when the closure is placed back onto the body to close the container and the indicators are aligned, the elongate member makes contact with a second surface of the ramp and rotation of the locking ring results such that the indicators on the body and/or closure and the locking part are no longer aligned.
11. A container as claimed in any one of claims 8 to 10, wherein the ramp protrudes from a radially inner surface of the locking ring.
12. A container as claimed in any one of claims 8 to 11, wherein in the ramp is a channel formed in the wall of locking ring, the central axis of the channel being at an angle from the axis of the ring.
13. A container as claimed in any one of claims 8 to 12, wherein the elongate member is a flexible cantilever.
14. A container as claimed in any one of claims 8 to 13, wherein the elongate member is hook shaped cantilever, extending from the inside surface of the closure.
15. A container as claimed in any one of the preceding claims, wherein the locking part is located between the body and the closure.
16. A container as claimed in claim 15, wherein the cooperating locking element located on the closure is a lug.
17. A container as claimed in claim 4, wherein the cooperating locking element located on the locking part is a circumferential flange on the inside surface of the locking part and the lug is formed on the elongate member, the flange being formed with a recessed portion through which the lug can pass during opening and closing of the closure.
18. A container as claimed in claim 17, wherein the ramp is disposed axially below the circumferential flange and generally inline with the recessed portion of the flange, the arrangement being such that there is a gap between the uppermost part of the ramp and the circumferential flange.
19. A container as claimed in claim 4, wherein the cooperating locking element located the locking part is a circumferential track attached to the inside surface of the locking part and the lug is formed with a distal head part, the lug extends from an inner surface of the closure,

the track being formed with an access hole through which the head of the lug can pass during opening and closing of the closure.

20. A container as claimed in claim 19, wherein the ramp is preferably disposed axially above the circumferential track.

21. A container as claimed in claim 19, wherein the arrangement of the ramp and the flange is such that upon rotation of the locking part in one direction the lug first passes through the gap and generally aligns with the recess before the elongate member makes contact with the ramp.

22. A container as claimed in any one of the preceding claims, wherein the body has an outlet, which can be sealed by a sealing element located on the closure.

23. A container as claimed in any one of claims 19 to 22, wherein the lug comprises a member formed with a barbed distal end.

24. A method for locking a closure to a container according to the first aspect of the present invention, the method comprising moving a locking part from an unlocked position to a locking position as a closure is transferred between respective conditions.

25. A method as claimed in claim 24, wherein as the closure is moved to the open condition the actuator means moves the locking part to the locked position.

26. A method as claimed in claim 24 or claim 25, wherein as the closure is moved to the closed condition the actuator means moves the locking part to the locked position

27. A method as claimed in any one of claims 24 to 26, wherein the method comprises automatically moving a locking part from an unlocked position to a locking position as a closure is transferred between respective conditions.

28. A closure for a container according to any one of the preceding claims.

29. A locking part for a container according to any one of the preceding claims 1 to 23.

30. A hollow body for a container according to any one of the preceding claims 1 to 23.

31. A closure for a container according to any one of the preceding claims 1 to 23.

32. Actuator means for a container according to any one of the preceding claims 1 to 23.

33. A container as claimed in any one of the preceding claims 1 to 23, wherein the container comprise a second containment volume.

34. A container as claimed in claim 33, wherein the container comprises a third containment volume.
35. A container as claimed in claim 32 or 34, wherein at least one of the further containment volumes is disposed at the upper volume of the body.
36. A container as claimed in claim 35, wherein at least one of the further containment volume is sealed by the closure.
37. A closure and features of a closure substantially as herein described with reference to the accompanying Figure.

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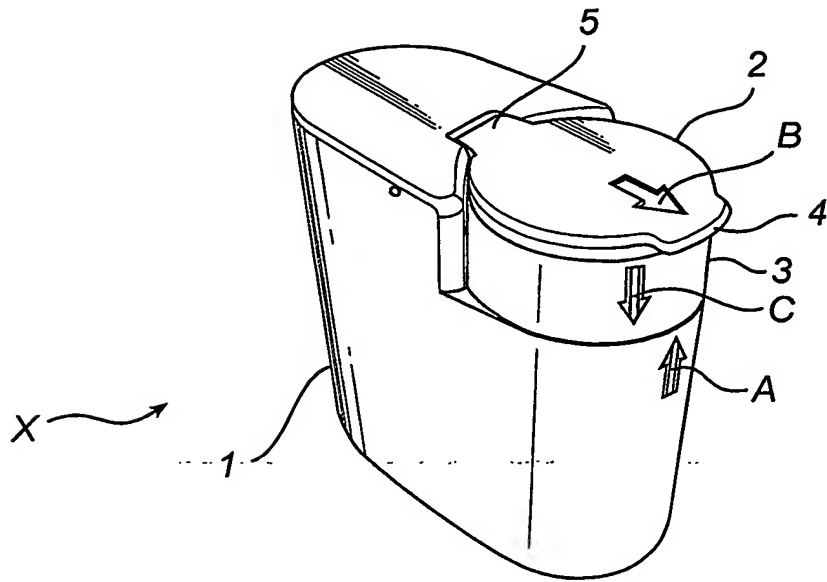


Fig. 1

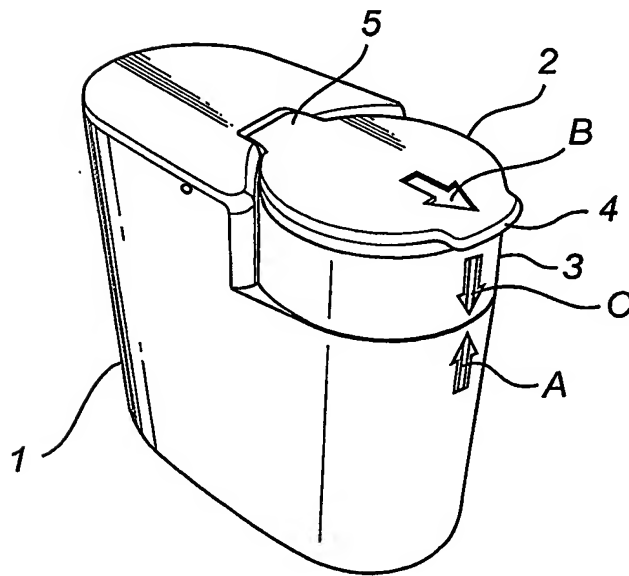


Fig. 2

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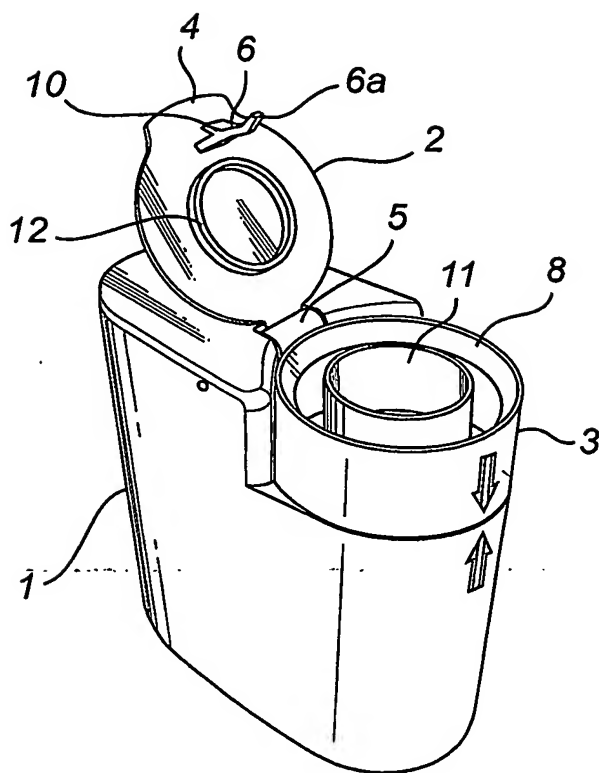


Fig. 3

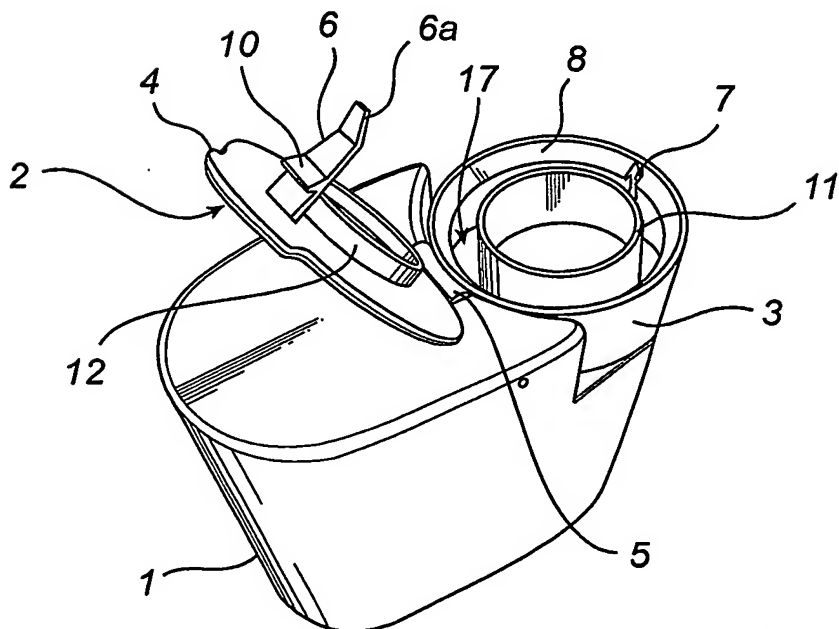


Fig. 4

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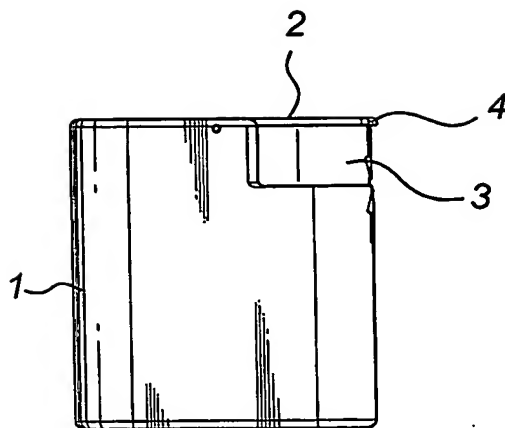


Fig. 5

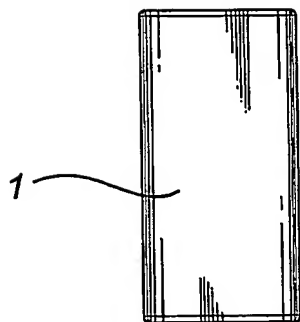


Fig. 6

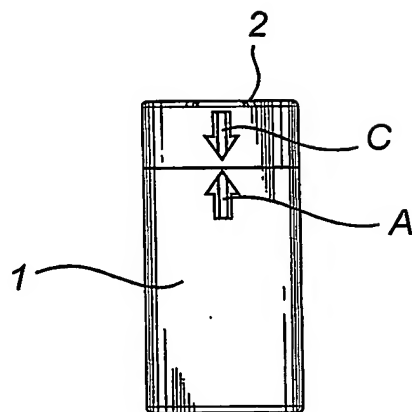


Fig. 7

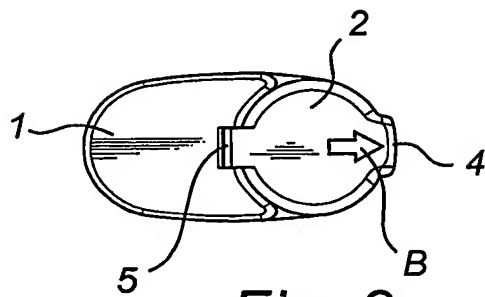


Fig. 8

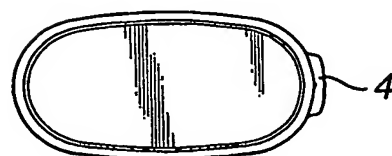


Fig. 9

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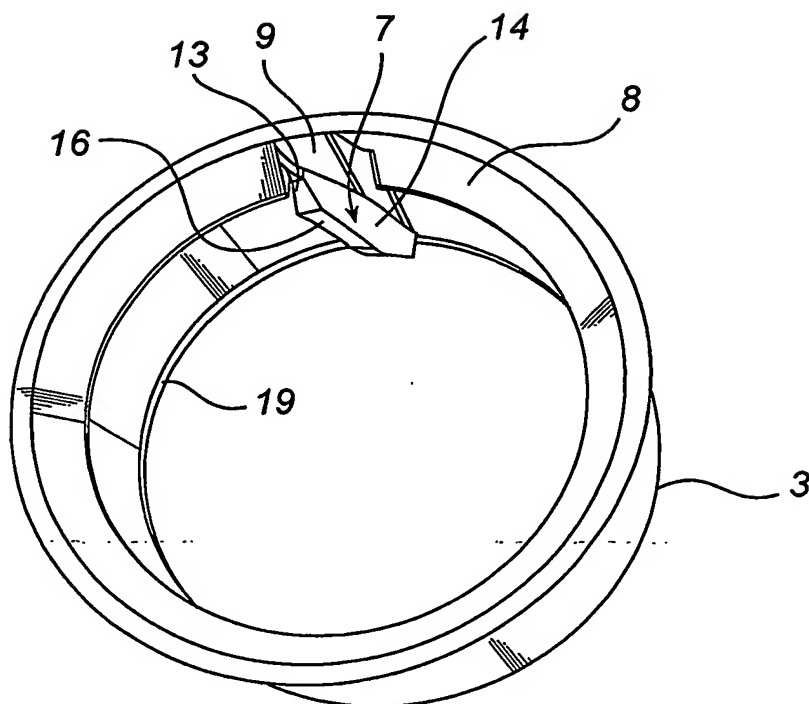


Fig. 10

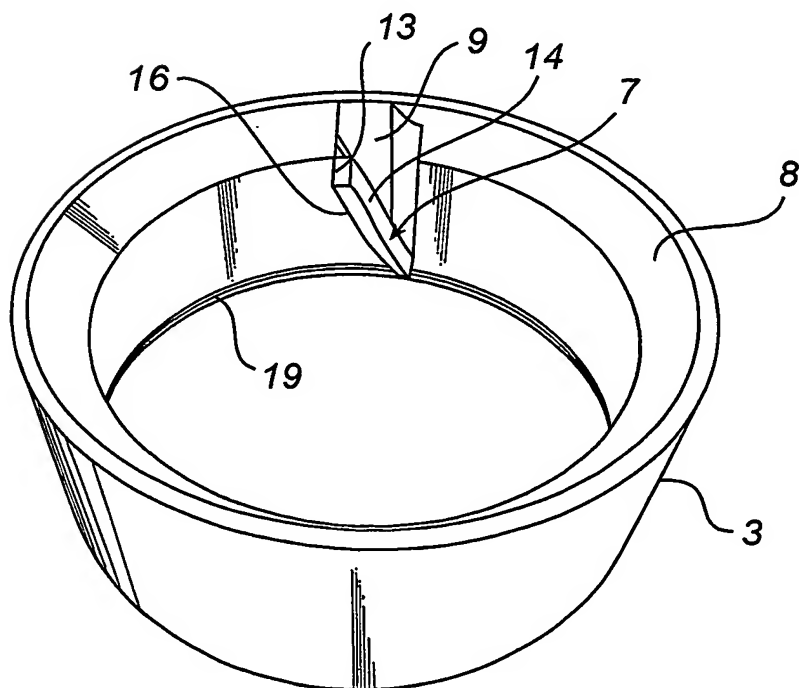


Fig. 11

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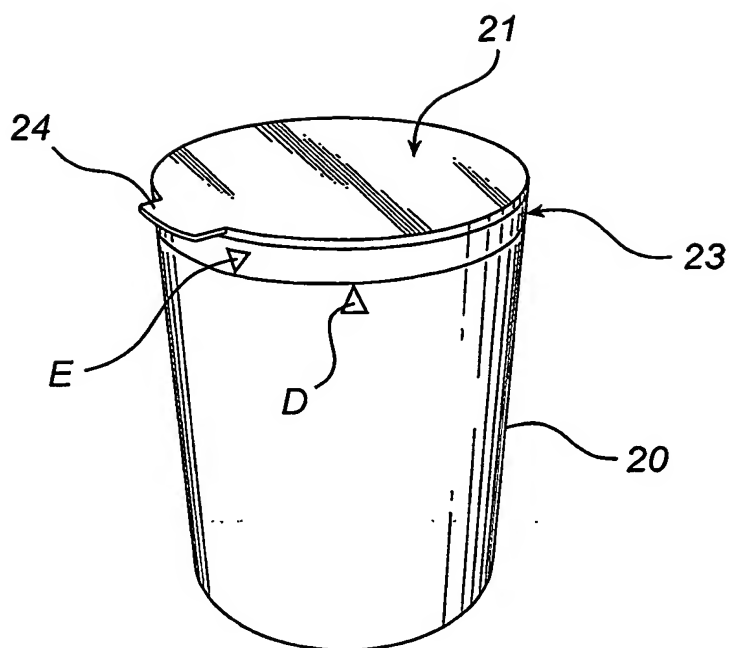


Fig. 12

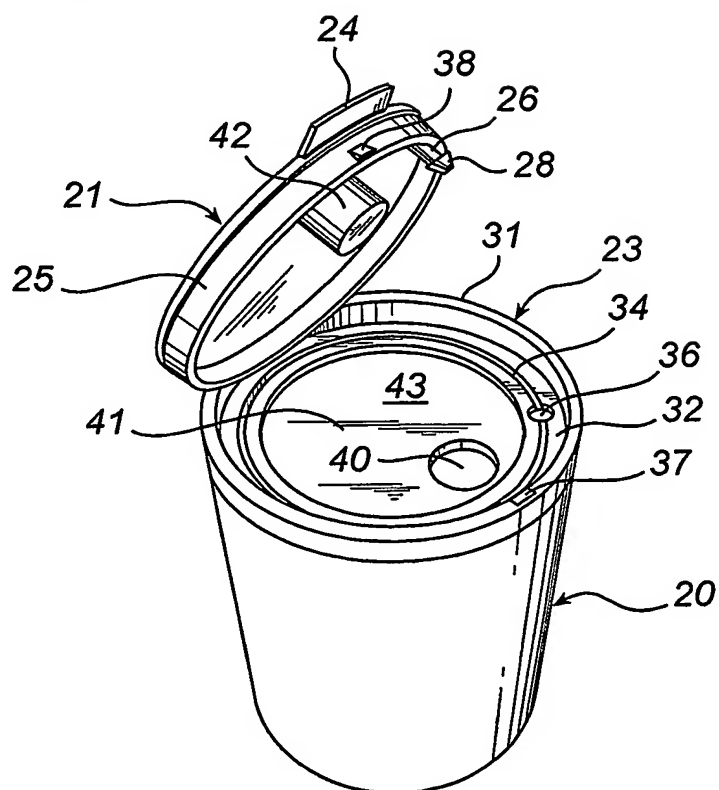


Fig. 13

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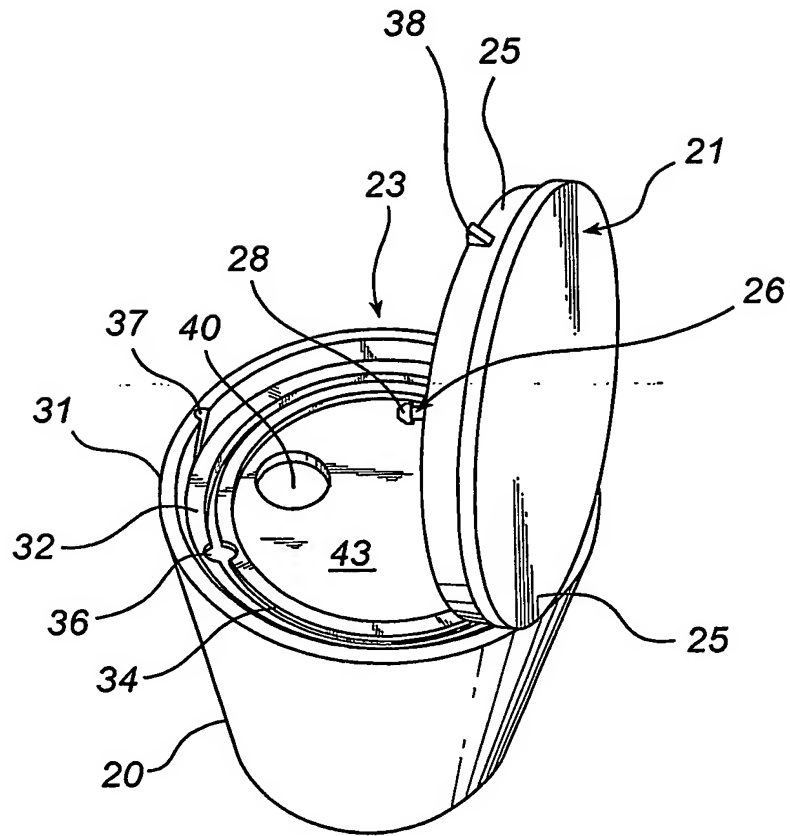


Fig. 14

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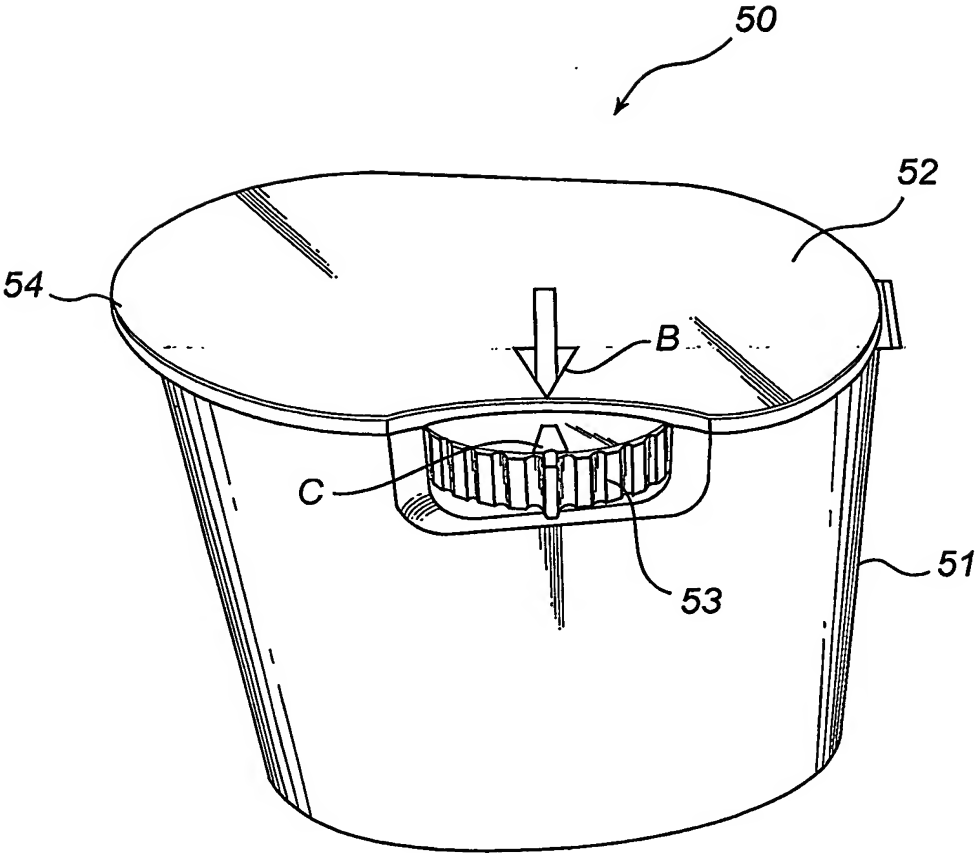


Fig. 15

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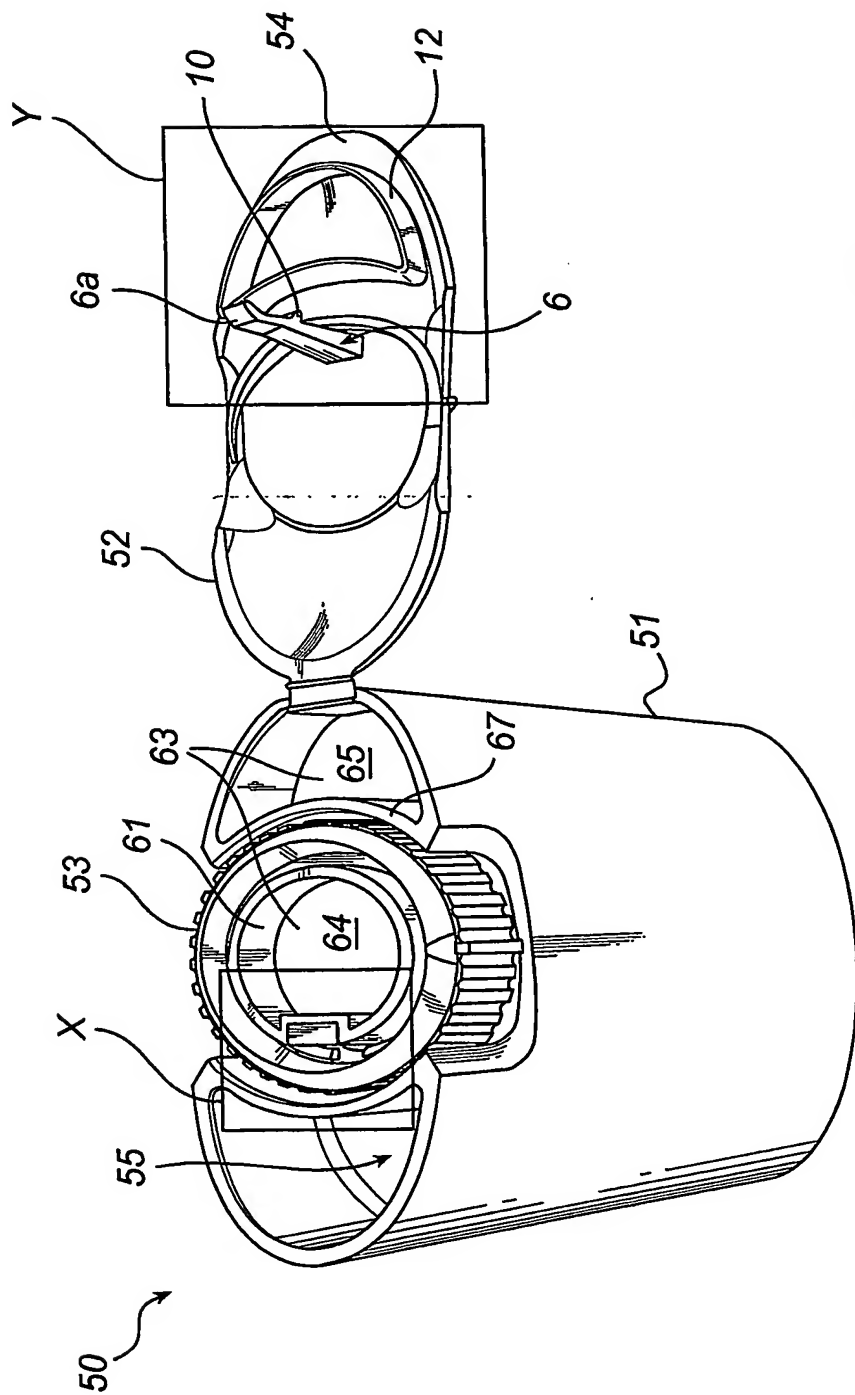


Fig. 16

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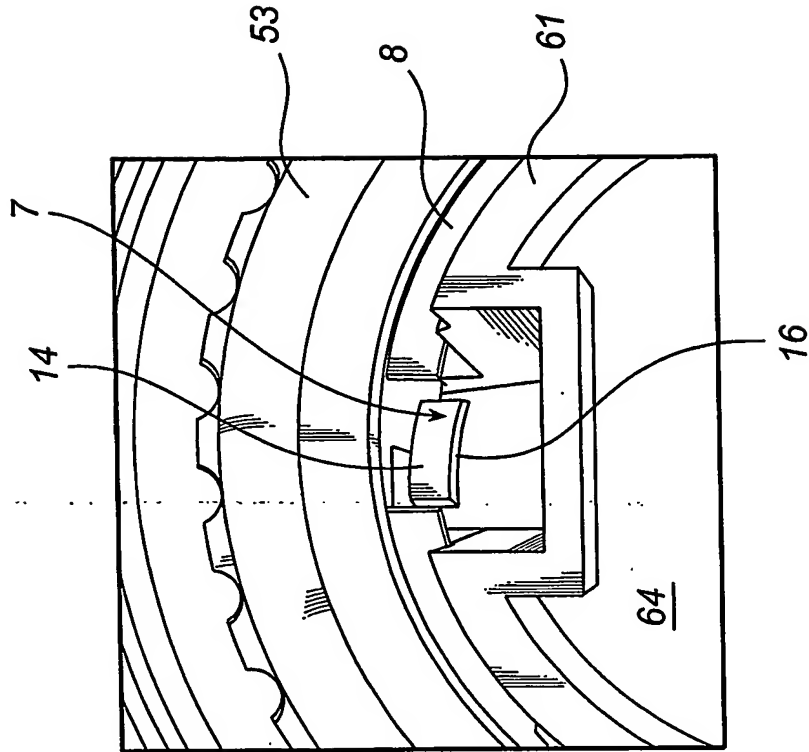


Fig. 18

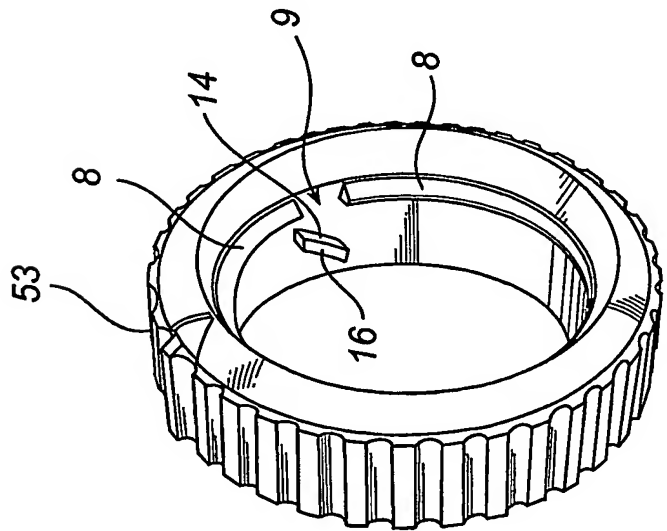


Fig. 17

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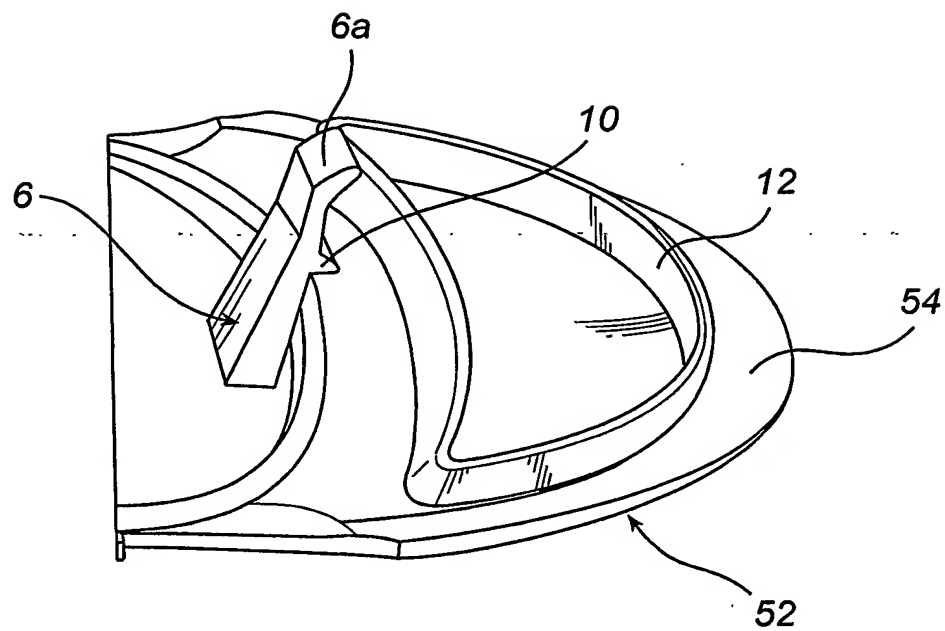


Fig. 19

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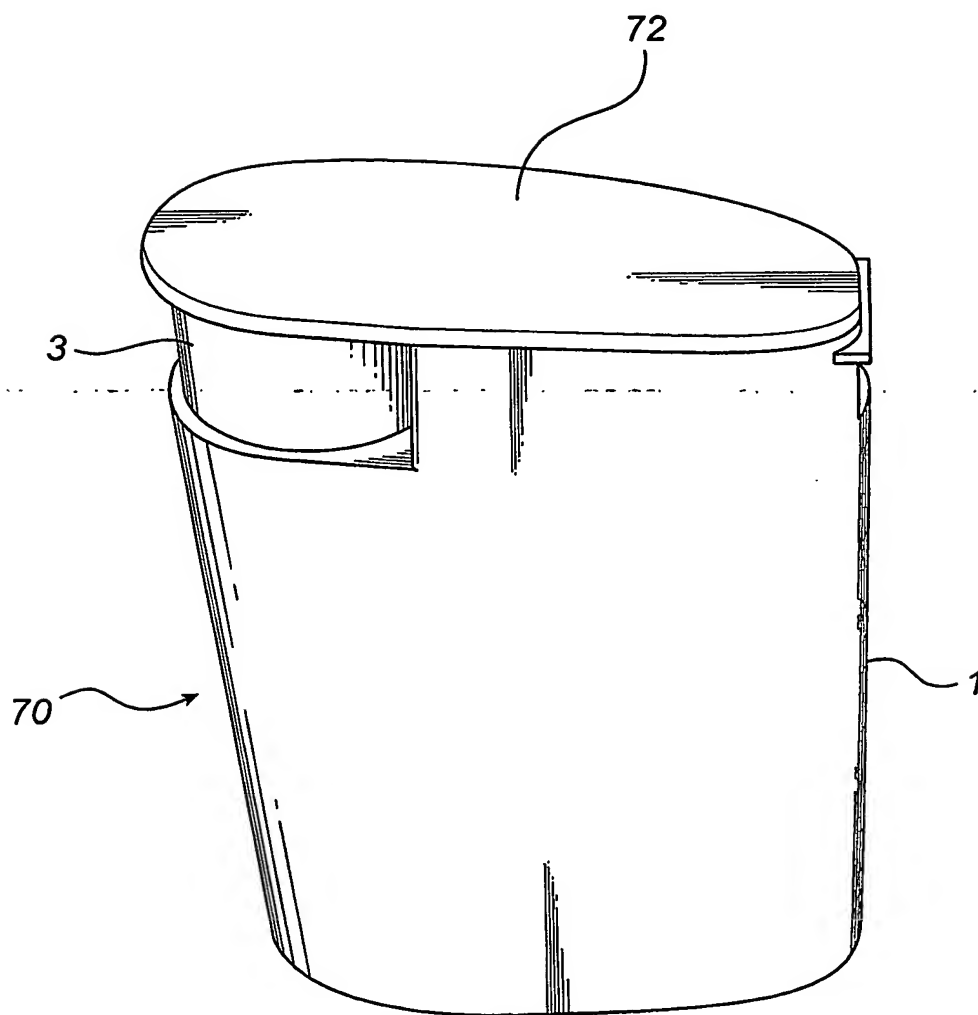


Fig. 20

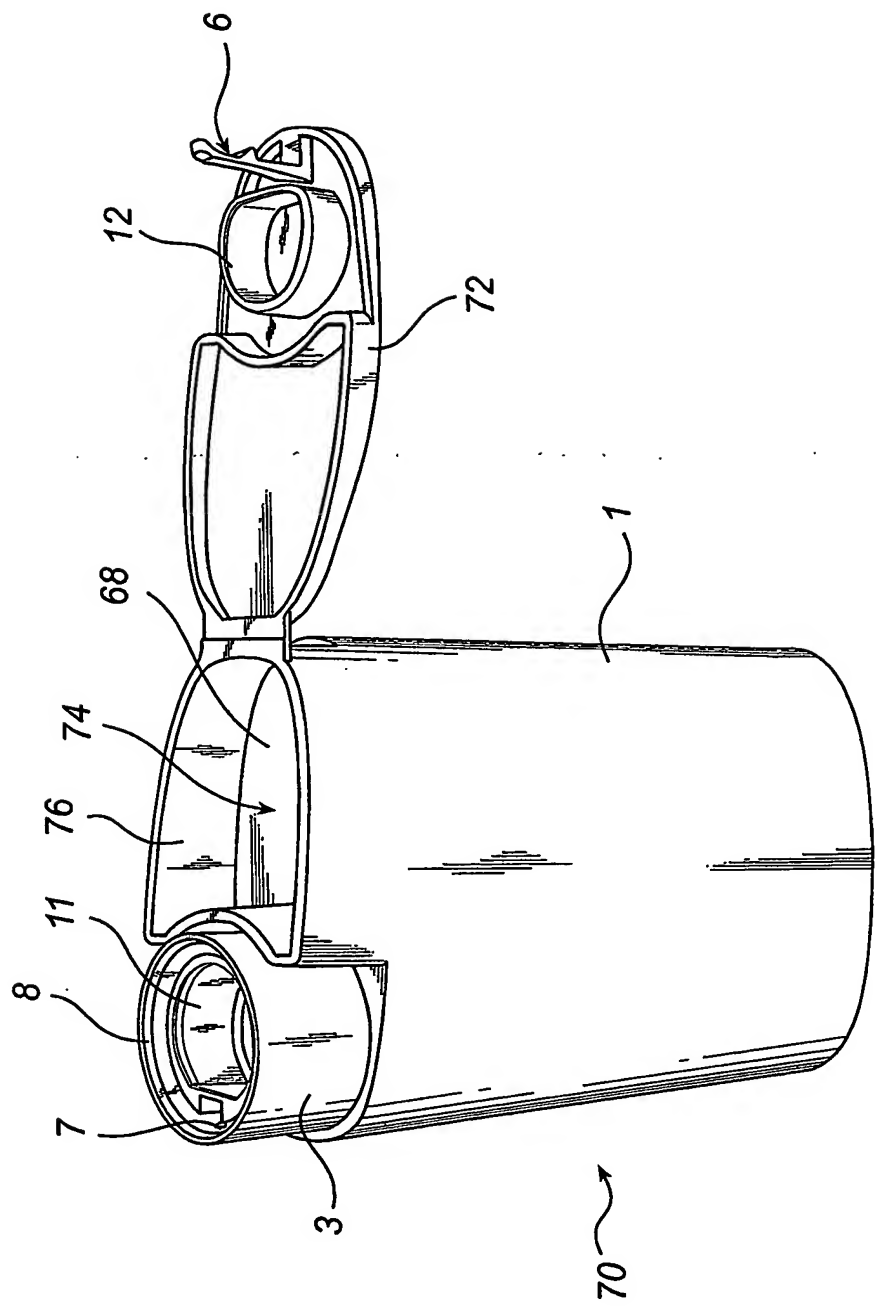


Fig. 21

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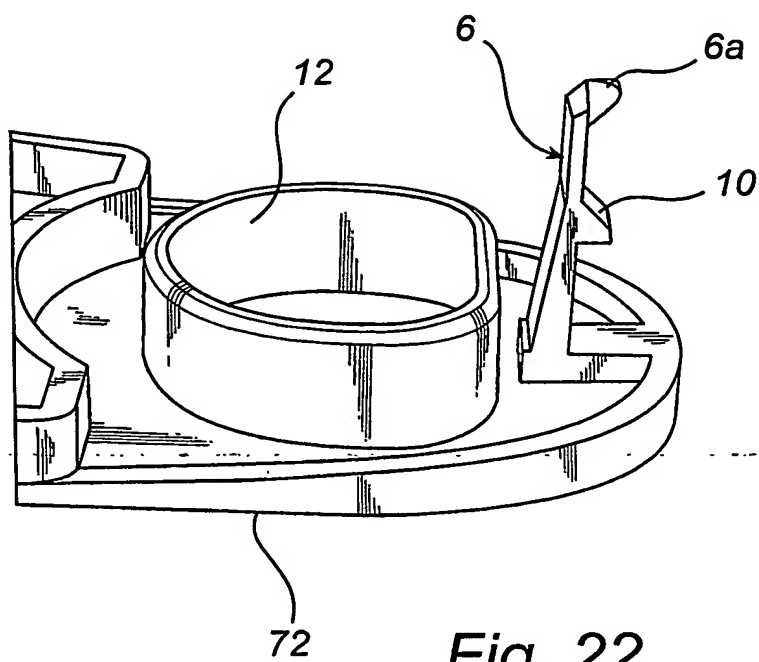


Fig. 22

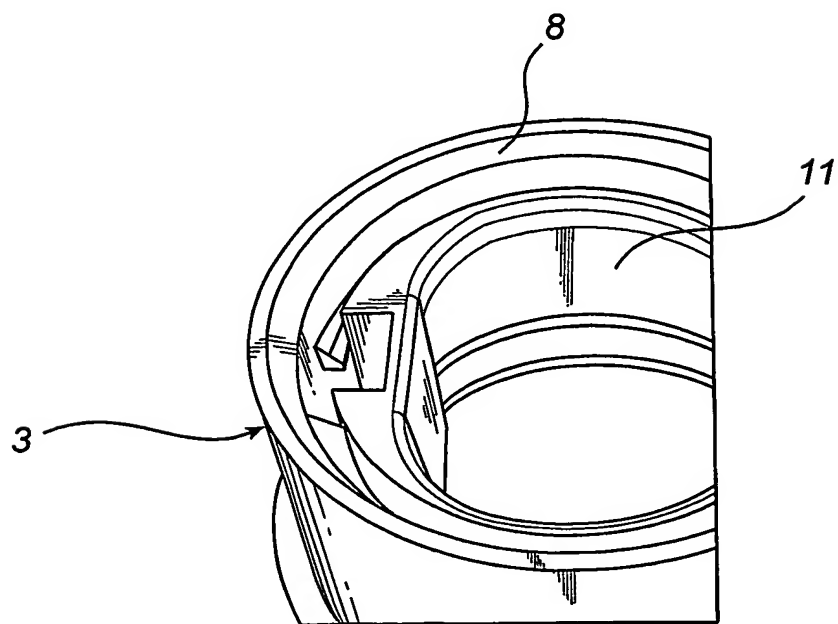


Fig. 23

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 2003/001704

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: B65D 55/14, B65D 50/06, B65D 25/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6082572 A (GALTON-FENZI ET AL), 4 July 2000 (04.07.2000); column 4, line 8 - line 26, figures 11A-D	1-10, 12-16, 22-34
Y		33-36
A		11, 17-21
Y	US 3931891 A (PEPPLER), 13 January 1976 (13.01.1976), column 1, line 59 - column 2, line 66	33-36
A	US 3693820 A (LINKLETTER), 26 Sept 1972 (26.09.1972), column 2, line 37 - column 4, line 68	1-24

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

12 March 2004

Date of mailing of the international search report

15-03-2004

Name and mailing address of the ISA/

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Box 5055, S-102 42 STOCKHOLM

Facsimile No. +46 8 666 02 86

Authorized officer

Anette Hall/EK

Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 2003/001704

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4779747 A (MOREL), 25 October 1988 (25.10.1988), column 1, line 63 - column 2, line 43 -- -----	1-24

INTERNATIONAL SEARCH REPORT
Information on patent family members

27/02/2004

International application No.
PCT/SE 2003/001704

US	6082572	A	04/07/2000	AU	1610297	A	22/08/1997
				AU	6746396	A	12/03/1997
				CA	2244192	A	07/08/1997
				EP	0845021	A	03/06/1998
				EP	0879184	A	25/11/1998
				GB	9601960	D	00/00/0000
				JP	11511192	T	28/09/1999
				JP	2000503946	T	04/04/2000
				WO	9728058	A	07/08/1997

US	3931891	A	13/01/1976	NONE			

US	3693820	A	26/09/1972	NONE			

US	4779747	A	25/10/1988	AT	50225	T	15/02/1990
				DE	3761647	D	00/00/0000
				EP	0265295	A,B	27/04/1988
				FR	2603871	A,B	18/03/1988
				JP	63082956	A	13/04/1988

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 2003/001704

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 37
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

Claim 37 relies on references to the drawings in respect of the technical features of the invention, contrary to Rule 6.2 (a) PCT.

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see extra sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 2003/001704

Invention 1: claims 1-16, 22, and 24-32.

Invention 2: claims 17, 18.

Invention 3: claims 19-21, 23

Invention 4: claims 33-36.

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1.

1. A container and a method for locking a lid according to claims 1-16, 22 and 24-32. The container includes a child-resistant manually-operable locking ring that is moved into a first position at which the locking ring engages the closed lid and a second position at which the lid is releasable.
2. A container for locking a lid according to claims 17 and 18. The container includes a child-resistant locking part, with a circumferential inner flange, that is moved into a first position at which the member engages the closed lid and a second position at which the lid is releasable.
3. A container for locking a lid according to claims 19-21 and 23. The container includes a child-resistant locking part, with a circumferential track on the inside that is moved into a first position at which the member engages the closed lid and a second position at which the lid is releasable.
4. A container provided with a secondary compartment according to claims 1, 33-36. The second compartment makes it possible to store things separately from the first compartment.

The single general concept of the present application is the teaching that locking parts that automatically move when the lid is opened or closed automatically activate the child-resistant feature.

However, this concept is known since document US, 6082572, A discloses a child-resistant container provided with locking parts that automatically move when the lid is opened or closed and thus automatically activate the child-resistant feature. A cylindrical member is turned into a position at which a slanted groove on the member engages an elongate member on the lid and when the lid is opened the elongate member forces the cylindrical member to turn (column 4, lines 8-26).

In the light of US, 6082572, A the subject matter of claims 1-6, 22 and 24 lacks novelty and inventive step.

The remaining special technical feature for invention 1 is a container provided with a locking ring. The remaining problem to be solved is to provide a locking part of a different design.

The remaining special technical feature for invention 2 is a container provided with a locking part with a circumferential inner flange. The remaining problem to be solved is to provide a locking part of a different design.

The remaining special technical feature for invention 3 is a container provided with a locking part with a circumferential track on the inside. The remaining problem to be solved is to provide a locking part of a different design.

The remaining special technical feature for invention 4 is a container provided with a secondary compartment. The remaining problem to be solved is to make it possible to store things separately from the first compartment.
.../...

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 2003/001704

The features of the two inventions are of such nature that they define different types of subject matter without any related technical relationship. These inventions are not linked together by a single common inventive concept since no technical relationship, involving corresponding special technical features, between the two sets of claims is to be found.

Consequently, inventions 1-4 each represent a different invention. Thus, the International Authority considers that there are four inventions in the claims.

Since there is no common feature in the inventions, which can be considered a special technical feature within the meaning of PCT Rule 13.1 and 13.2, no technical relationship between inventions 1-4 can be identified. Therefore, the inventions lack unity.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

CORRECTED VERSION

**(19) World Intellectual Property
Organization
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(71) Applicant (for all designated States except US): AS-
TRAZENECA AB [SE/SE]; S-151 85 Södertälje (SE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): BENKTZON,

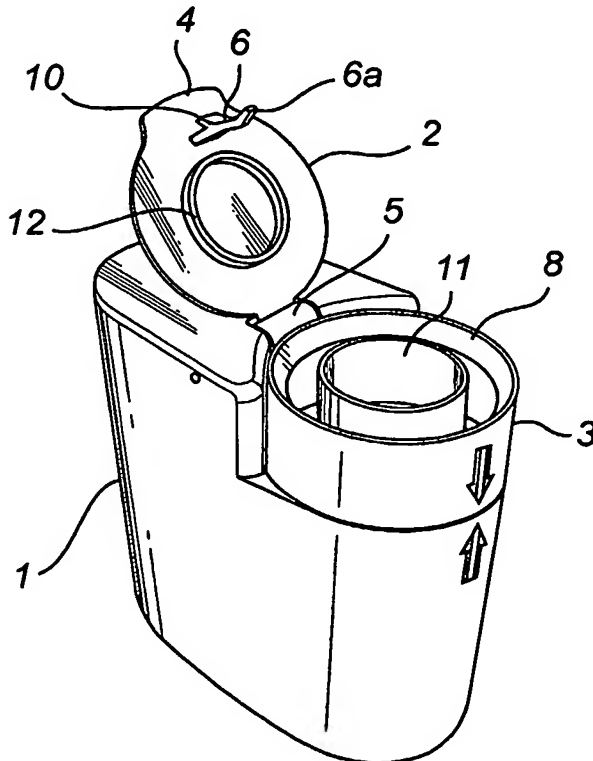
Maria [SE/SE]; Ergonomi Design Gruppen AB, Box 14004, S-167 14 Bromma (SE). **NILSSON, Thomas** [SE/SE]; Ergonomi Design Gruppen AB, Box 14004, S-167 14 Bromma (SE). **VEJBRINK, Ulrika** [SE/SE]; Ergonomi Design Gruppen AB, Box 14004, S-167 14 Bromma (SE).

(74) Agent: GLOBAL INTELLECTUAL PROPERTY; AstraZeneca AB, S-151 85 Södertälje (SE).

(81) Designated States (*national*): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, EG, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT (utility model), PT, RO, RU, SC, SD, SE, SG, SK (utility model),

[Continued on next page]

(54) Title: SECURITY CONTAINER WITH LOCKING CLOSURE AND METHOD FOR LOCKING A CLOSURE



(57) Abstract: The present invention relates to a container that can hold tablets or liquids, for example, for use in the pharmaceutical, chemical and food industries and in particular to a child resistant locking arrangement for a container. The object of the invention is to ensure that the container is easy to open, in particular, for elderly and disabled persons and that the container is child resistant and can be sealed to prevent excessive ingress of water vapour. The container comprises a hollow body holding solid or liquid contents and a closure, which closes the container. A locking ring is provided between the body and closure, which can rotate between body and closure. An indicator arrow is located on body and an indicator arrow is located on closure. The locking ring also carries an indicator arrow and it is only when the indicator arrow is aligned, by turning the locking ring, with the indicator arrows and that the closure can be opened by lifting or flipping the projecting edge of the closure.

WO 2004/041671 A1



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VC, VN, YU, ZA, ZM, ZW.

- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

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- with international search report

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see PCT Gazette No. 10/2005 of 10 March 2005, Section II

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.